



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF
PREVENTION, PESTICIDES, AND
TOXIC SUBSTANCES

OPP OFFICIAL RECORD
HEALTH EFFECTS DIVISION
SCIENTIFIC DATA REVIEWS
EPA SERIES 361

MEMORANDUM

DATE: July 31, 2001

SUBJECT: PP# 5E04434. Additional Residue Data. Fosetyl-Al [aluminum tris (O-ethylphosphonate)] on Blueberries. Chemical:123301, DP Barcode: D272049, MRID Nos. 452230-00, 452230-01, 452230-02.

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TO: Robert Forrest/Shaja Brothers, PM Team 5, MUIERB
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Dr. William L. Biehn, on behalf of the Interregional Research Project No. 4 (IR-4), and the Agricultural Experiment Stations of Maine, Michigan, New Jersey, North Carolina and Oregon, submits additional residue chemistry data in response to the requirement by the Agency for appropriate data in support of the establishment of a permanent tolerance for the residues of fosetyl-Al [aluminum tris (O-ethylphosphonate)] in or on blueberries at 40 ppm. The blueberry petition was originally reviewed by CBTS (D210421 and D219670, W. Cutchin, 3/21/95 and 1/26/96). It was found deficient and a time-limited tolerance (expiration date 12/31/00) was established at 40 ppm (40 CFR 180.415(a)). The two field trials submitted by IR-4 to resolve this deficiency are addressed in this review. In addition, IR-4 also submitted a revised Section F (dated 1/24/01) proposing a tolerance for fosetyl-Al in or on Crop Subgroup 13B, Bushberry Subgroup, lingonberry, salal, and juneberry at 40 ppm (Revision received by HED from the MUIERB, 7/05/01).

RECOMMENDATION

There are no residue chemistry data requirements that would preclude the establishment of permanent tolerances for the residues of fosetyl-Al in/on Crop Subgroup 13B: Bushberry subgroup, lingonberry, juneberry and salal at 40 ppm. Blueberry is a representative commodity for Crop Subgroup 13B: Bushberry subgroup (40 CFR § 180.41); lingonberry, juneberry and salal are very minor berries related to blueberry. Therefore, RAB3 has no objection in the establishment of permanent tolerances for the residues of fosetyl-Al (aluminum tris(O-ethylphosphonate) on the Bushberry subgroup, lingonberry, juneberry and salal at 40 ppm.

DETAILED CONSIDERATION

CBTS Deficiency (D219670, W. Cutchin, 1/26/96):

“The geographic diversity of the studies are adequate to represent the blueberry growing regions requested by this petition. However there were not an adequate number of studies performed. Two more magnitude of the residue studies must be submitted to establish a permanent tolerance: one each in Region 2, which includes North Carolina and New Jersey, and in Region 5, which includes Michigan.”

Petitioner's Response:

Two crop field studies were initiated in 1996 in North Carolina and Michigan. However, the Michigan trial did not meet the GLP requirements and was rerun in 1998. Each of the submitted field trials consisted of one treated and one untreated control plot. The test substance, Aliette WDG (80% ai), was applied as a foliar spray using a CO₂ Backpack Sprayer at the rate of 4.0 lbs ai/A. Each treated plot received 5 foliar sprays or a total of approximately 20.0 lbs ai/A. The first application was made at the pink bud stage and repeated at 12 to 22 day intervals. The PHI is 0 day. Residue samples were harvested randomly, frozen immediately and shipped frozen to the Analytical Laboratory where they were stored frozen at $\leq -20^{\circ}\text{C}$ until analyzed. The samples were homogenized with dry ice and extracted within 24 hours. The field samples were analyzed in sets consisting of untreated controls, 2 analytical recoveries (which bracketed the range of the residue concentration in the crop samples) and 2 treated crop samples. The studies are included in:

452230-01 Biehn W.L. Fosetyl-Al - Magnitude of Residue on Blueberry (1996 Trial).
IR-4 PR No. B4937, Field ID No. B4937.96-NC13, B4937.96-MI-22, 156 pp.

452230-02 Biehn W.L. Fosetyl-Al - Magnitude of Residue on Blueberry (1998 Trial).
IR-4 PR No. C4937, Field ID No. C4937.98MI-22, 112 pp.

North Carolina Trial (1996): The blueberry samples were shipped whole to Rhone-Poulenc Ag Company where they were stored frozen at $<-25^{\circ}\text{C}$ until analyzed about 56 days after harvest. The analytical method used for the 1996 trials is entitled "Analytical Method for the Determination of Fosetyl-Al in Plants and Replacement of Diazomethane with (Trimethylsilyl) diazomethane," Anibal Lopes, June 7, 1995 [Rhone-Poulenc Ag Company (RPAC) File No. 44788]. The performing laboratory was Rhone-Poulenc Ag Company at Research Triangle Park (RTP). Residues were extracted from blueberries with 1% sulfuric acid, hexane and an aliquot precipitated with isopropanol. The fosetyl-Al was derivatized to fosetyl-methyl with (trimethylsilyl) diazomethane. The solvent was evaporated and the residue quantified using a gas chromatograph equipped with flame photometric detector (FPD) in the phosphorus mode. Method verification was carried out on blueberry substrates spiked with fosetyl-Al at 0.1, 5.0, and 30 ppm. The verification recoveries ranged from 86 - 88% at 0.1 ppm, 92% to 96% for 5.0 ppm and 91% to 93% for 30 ppm. Blueberry samples freshly fortified at 5.0 ppm were also analyzed concurrent with the field samples to monitor the method efficiency. The maximum residue in the North Carolina crop trial was 32.2 ppm with the concurrent recovery reported at 89.8% (Tables 1, 2 and 4). The LOQ was 0.1 ppm. Since the North Carolina samples were analyzed 56 days after harvest, a storage stability study was performed. The results show that the residues of fosetyl-Al in blueberry during frozen storage are stable up to 89 days (Table 3).

Michigan Trial (1998): The blueberry samples from the 1998 Michigan crop field trials were shipped frozen to Colorado Analytical Research and Development Corporation in Colorado Springs, Colorado where they were stored frozen at $\leq -20^{\circ}\text{C}$ until analyzed. The samples were homogenized under dry ice and extracted within 24 hours. The blueberry samples from the 1998 Michigan crop field trial were analyzed using the Rhone-Poulenc method, "Fosetyl-Al: Method of Analysis for Fosetyl-Al Residues in Citrus" File No. 45205. The only modification was in the preparation of diazomethane solution which followed the Colorado Analytical-345-Diazomethane method. The analytical method has been used and already reviewed in the original submissions for this petition. It is also included in this submission as an attachment in MRID#452230-02. No deviation from the analytical portion of the protocol was made. The performing laboratory was the Colorado Analytical Research & Development Corporation. Method verification was carried out with store-bought blueberries prior to the analysis of the field samples. The homogenized samples were fortified at 0.05 ppm, 15.0 ppm, and 30.0 ppm. The method verification recoveries ranged from 71% to 105% for the 0.05 ppm spiking level, 93% to 94% for the 15 ppm, and 86.5% to 97.5% for the 30.0 ppm. (see Table 1). The crop field trial samples were analyzed 19 days after harvest. The maximum residues in the Michigan crop trial was 12.82 ppm with the concurrent recovery reported at 86% as shown in Table 4. The LOQ was 0.05 ppm. The results of the method verification and crop field trial are included in Tables 1 and 4.

Table 1. Method Verification Results on Blueberry Untreated Control Samples Fortified with Fosetyl-Al					
Field Site/Study ID/Year	Matrix	Analyte Fortified	Fortification Level (ppm)	Recovery (ppm)	Recovery %
North Carolina/ B4937 (1996)*	blueberry	fosetyl-Al	0.1	0.089, 0.088	85.9, 87.7 (Av 86.8)
			5.0	4.619, 4.801, 4.650, 4.330	92.4, 96.0 (Av 92.0)
			30.0	27.99, 27.20	93.3, 90.7 (Av 92.0)
Overall Ave. Recovery					91.0 ± 3.72 (n=6)
Michigan/C4937 (1998)**	blueberry	fosetyl-Al	0.05	0.036, 0.052, 0.043	71.3, 104.9, 85.0 (Av 87.1)
			15.0	14.0, 14.13	93.1, 94.2 (Av 93.7)
			30.0	29.26, 28.74, 26.07	97.5, 95.8, 86.9 (Av 93.4)
Overall Ave. Recovery					92.8 ± 11.3 (n=6)

* LOQ = 0.1 ppm

** Corrected for background found in untreated control (0.028 ppm), LOQ = 0.05 ppm

Table B2. 1996 Procedural Recovery			
Matrix	Analyte Fortified	Fortification Level (ppm)	% Recovery
blueberry (N.C.)	fosetyl-Al	5.0	93.1, 86.5
Blueberry (M.I.)	fosetyl-Al	0.05	85
		30.0	86.9

Table 3. Storage Stability of Fosetyl-Al in Blueberries		
Matrix	Residue Level (ppm)	
	After 0 day	After 89 days
blueberries ¹	0/0	ND
	29.8/36.6	29.9/39.2

¹Crop samples from Michigan crop trial.

Table 4. Residues of Fosetyl-Al in/on Blueberries Following Four Applications of 4 lbs of Fosetyl-Al (Aliette 80 WDG) or a Maximum Rate of 20 lbs Per Season (1.25x proposed rate).				
Field Trial Site/Year	Spray Volume (gal/A)	Treatment (lb ai/season)	PHI (days)	Uncorrected residue (ppm)
Castle Hayne, N. C. (1996) ²		UTC ¹	0	ND
	91 to 92	4 x 5	0	32.2/16.2 Av = 24.2
East Lansing, MI (1998) ³		UTC ¹	0	
	20 to 23	4 x 5	0	12.82, 6.66 Av = 9.74

¹Untreated control

²Analyzed 56 days after harvest

³Analyzed 19 days after harvest

RAB3 Conclusion:

The data from the magnitude of the residue studies are sufficient to support the establishment of a permanent tolerance for the residues of fosetyl-Al in blueberries at 40 ppm per original petition (1995). Since blueberry is a representative commodity for Crop Subgroup 13B: Bushberry subgroup (40 CFR § 180.41), and the residue data on blueberries can be translated to support the same use on lingonberry, junberry and salal which are very minor crops and closely related to blueberry, permanent tolerances can be established for aluminum tris(O-ethylphosphonate) on the Bushberry subgroup and on lingonberry, junberry and salal at 40 ppm.

cc:RAB3 Reading F, PP#05E04434, M. Sahafeyan, CEB,
RD/I:DESAC: :SDapson: 8/1/2001 7509C:RAB3
A.Acierto:CM#2:RM806C:7/31/2001:Fosetyl-Al



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